OBJECTIVE
The overall aim of the programme is to produce new knowledge on how to foster and advance the transition to a bioeconomy-based society in the Nordic countries by integrating research, innovation and entrepreneurship in the private and public sectors. The programme funds activities that are cross-sectoral and interdisciplinary, and that involve the private and public sector and other stakeholders.

FUNDING
The total budget of the programme is approximately MNOK 90. Three Nordic Centres of Excellence are being financed with approximately 30 million NOK each.

ACTIVITIES
Three Nordic Centres of Excellence were launched in 2017. The Financing organisations are the Academy of Finland, The Icelandic Centre for Research (Rannís), the Research Council of Norway, the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS), and NordForsk.

BACKGROUND
The Nordic region is unique in that it has a surplus of primary resources. Primary resources will become an even more important asset in the Nordic society of the future, which involves a transformation from economic growth based on fossil fuels towards a sustainable and bio-based society.

The point of departure for this programme is water. Water is a fundamental part of the bioeconomy and bioproduction value chains, e.g. in transportation, primary plant production, industrial processes and for social well-being.

As a Nordic platform, the programme will build on the national programmes and bring Nordic added value to the national and international research and innovation activities. The Nordic approach will advance the bioeconomy transition in a holistic way. This will give new insight into how research and innovation can jointly add momentum to bio-based and sustainable societal development.

The development of new knowledge is at the core of the Nordic Bioeconomy Programme. Basic building blocks are research, innovation and entrepreneurship, with active involvement from the private and public sectors, industry, consumers, end-users and others.

NordForsk

NordForsk is an institution under the Nordic Council of Ministers that facilitates and provides funding for Nordic research and research infrastructure cooperation.

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Illustration: Magnus Voll Mathiassen. Design: jnd.no

NordForsk

The Nordic Bioeconomy Programme under NordForsk will generate new knowledge on how to promote and advance the transition to a bioeconomy-based society in the Nordic countries. The programme has a budget of approximately NOK 90 million, distributed among three Nordic Centres of Excellence (NCoE) that were launched in 2017.

BIOWATER. An Integrating Nexus of Land and Water Management for a Sustainable Nordic Bioeconomy:

Researchers from a variety of subject fields will be working with water and environmental resources management authorities and the business sector to develop future scenarios concerning "the green transition". Using existing data from Nordic catchments, the BIOWATER centre will quantify the effects of the various scenarios on water, elemental cycles such as carbon and plant nutrient dynamics, and ecosystem services.

The BIOWATER centre consists of eight Nordic partners and five non-Nordic external collaborating research institutions, and includes 19 stakeholders from various countries and relevant sectors.

"Along with photosynthesis, water may be the most important factor for achieving the green transition," says Per Stålnacke, Senior Scientist at the Norwegian Institute of Bioeconomy Research and co-head of the BIOWATER centre. "Our approach is to examine water's pathways in the landscape and to quantify all the services water provides from catchments to the end user," adds Jan Vermaat, Head of Department at the Faculty of Environmental Sciences and Natural Resource Management, Norwegian University of Life Sciences, and the centre's other co-head.

Project leader: Senior Scientist Per Stålnacke, Norwegian Institute of Bioeconomy Research (NIBIO). Photo: Erling Fløistad/NIBIO

NORDAQUA. Towards Versatility of Aquatic Production Platforms: Unlocking the Value of Nordic Bioresources:

Research on the "blue" bioeconomy – that is, on the sustainable utilisation of biological organisms that live in an aquatic environment – is rapidly expanding across the world and there is widespread interest in developing techniques for harnessing photosynthetic algae for refining carbon-neutral biological products.

The NordAqua centre is a consortium of 10 universities and research institutes, 10 industrial partners and several societal stakeholders. The virtual centre includes world-leading experts in photosynthesis, synthetic biology, industrial techniques, microbiology, medical research, water management and entrepreneurship. In all, close to 100 researchers are involved.

"Our aim is to encourage the transition to a more bio-based, sustainable Nordic region using microorganisms that are specially adapted to our harsh northern climate. We will carry out cutting-edge research on photosynthetic algae and develop technology for using this, for example, to purify sewage water and produce biomass which in turn can be exploited as a source of energy such as food or feed for animals," says head of the centre, Eva-Mari Aro.

Project leader: Academy Professor Eva-Mari Aro, University of Turku. Photo: Academy of Finland/Reco

SUREAQUA. Nordic Centre for Sustainable and Resilient Aquatic Production:

The SUREAQUA centre comprises a multidisciplinary group working to generate knowledge, innovation and technology to ensure sustainability and resilience in aquaculture.

"The abundance of aquatic raw materials in oceans, lakes and rivers provides the Nordic countries with unique opportunities for biomass production and refining. Aquaculture, which can be defined as the production of freshwater and ocean-based resources for human use or consumption, can provide large amounts of nutritional foodstuffs, but requires meticulous resource administration to ensure sustainable activity," says Fiona Provan, who is heading the centre together with Senior Research Scientist Elisa Ravagnan of the International Research Institute of Stavanger.

The SUREAQUA centre is a consortium of 40 Nordic partners representing research and development, industry, public entities and environmental agencies. Together, the partners will develop new solutions to extract food for animals and humans alike from raw materials found in saltwater and freshwater. Focus areas will include fish behaviour, water quality and energy efficiency as well as better utilisation of by-products.

The centre also makes systematic efforts to ensure that the products and techniques they develop will be economically, socially and environmentally sustainable.

Project leader: Senior Research Scientist Fiona Provan, International Research Institute of Stavanger (IRIS). Photo: Elisabeth Tønnessen/IRIS

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